National Aeronautics and Space Administration

Bioengineering Branch

Future human missions beyond Low Earth Orbit will require the development of technologies that minimize launch mass and resupply costs and provide a high degree of reliability and self-sufficiency. The Bioengineering Branch is developing next generation technologies to enable humans to live beyond Low Earth Orbit for extended periods of time. Research and technology development areas include atmosphere revitalization and trace contaminant control, water recovery, waste management, in situ resource utilization, improved production of cellulosic and algal biofuels feedstocks, engineered nanoscale self-assembling enzyme complexes, and systems engineering tools for technology gap identification, trade studies, and down selection.

Research and Technology Development Areas

Atmosphere Revitalization
Development of advanced technologies to remove carbon dioxide and other contaminants from cabin atmospheres and to facilitate their transformation into safe and useful products.

Water Recovery
Development of technologies to significantly improve water recovery rates, increase reliability, and reduce consumables.

Waste Management
Development of technologies to reduce volume, recover water and other resources, and provide microbial and chemical safening and repurposing of waste materials.

Synthetic Biology
Engineer biological systems to provide critical resources for exploration, including food, life support, and materials.

Biofuel, Omega Project
Development of offshore photobioreactors for biofuel production while treating wastewater, sequestering carbon, and providing a platform for aquaculture.

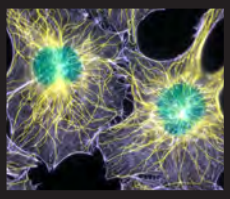
Systems Engineering
Architecture analysis, modeling and simulation for the design and technology selection of safe, ultra reliable life support systems for missions beyond Low Earth Orbit.

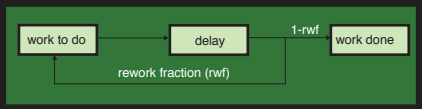
Analytical Chemistry Lab
Full service analytical chemistry lab supporting a wide variety of gas and liquid sample analysis needs.











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